Published in final edited form as:

Support Care Cancer. 2015 August ; 23(8): 2255–2265. doi:10.1007/s00520-014-2573-9.

Baseline Characteristics and Concerns of Female Cancer Patients/Survivors Seeking Treatment at a Female Sexual Medicine Program

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Abstract

Purpose—To characterize patients seeking treatment at a Female Sexual Medicine and Women's Health Program and examine their sexual/vaginal health issues.

Methods—Data from clinical assessment forms were extracted from 509 women referred to the Female Sexual Medicine and Women's Health Program during/after cancer treatment. The form consists of a Vaginal Assessment Scale [VAS], vaginal health items, patient-reported outcomes (PROs) (Sexual Activity Questionnaire [SAQ], Sexual Self-Schema Scale [SSS], Female Sexual Function Index [FSFI]), and exploratory items.

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Presented as a focused plenary at the 2014 Society of Gynecologic Oncology Annual Meeting on Women's Cancer. March 22–25, 2014. Tampa, FL.

Conflict of Interest

The authors have no conflicts of interest to declare.

The authors also have full control of all primary data and agree to allow the journal to review the data if requested.

Results—Of 509 patients, 493 (97%) completed PROs; 253 (50%) received a pelvic examination. The majority had a history of breast (n=260, 51%), gynecologic (n=184, 36%), or colorectal/anal (n=35, 7%) cancer. Mean age was 51.2 years; 313 (62%) were married/partnered. Approximately two-thirds had elevated vaginal pH scores (5–6.5 [35%] or 6.5+ [33%]) and minimal (62%) or no (5%) vaginal moisture. Eighty-seven patients (44%) experienced pain during their exam (23% mild, 11% moderate, 1.5% severe, and 8.5% not indicated). Fifty-three percent engaged in sexual activity with a partner; only 43% felt confident about future sexual activity. Ninety-three percent were somewhat-to-very concerned/worried about sexual function/vaginal health. Approximately half had moderate/severe dryness (n=133, 51%) and dyspareunia (n=120, 46%). Mean SSS score was 60.7, indicating a slightly positive sexual self-view. However, 93.5% (n=429) had an FSFI score <26.55, suggesting sexual dysfunction.

Conclusions—At initial consult, women reported vaginal dryness, pain, and sexual dysfunction. For many women, pelvic exams showed elevated vaginal pH, lack of moisture, and discomfort with the exam itself. Future analyses will examine changes over time.

Keywords

cancer; survivorship; female sexual health; quality of life; vaginal health

Introduction

With the US population of cancer survivors expected to grow to 18 million by 2020 [1], quality of life (QOL), including issues of sexual function and vaginal health, will require more attention [2–4].

Substantial sexual/vaginal health concerns have been identified in recent surveys [5–8]. Although the normal aging process prompts physical changes that influence sexual function and vaginal health, with more than half of all women experiencing vulvovaginal atrophy after menopause, cancer and its treatment can compound these issues or induce symptoms earlier. The loss of genital tissue elasticity and lubrication often causes vaginal dryness and discomfort, and can lead to pain with gynecologic examinations—a crucial component of cancer surveillance. These changes can also cause dyspareunia in some women and consequent loss of sexual desire [9–11]. Estrogen deprivation and/or menopause triggered by cancer treatment is typically abrupt, with more intense and/or prolonged symptoms, including hot flashes, vaginal dryness, and dyspareunia [12–15]. When women are treated for cancer with pelvic radiation, systemic chemotherapy, and/or endocrine therapies such as aromatase inhibitors, vaginal atrophy is often more severe [15]. Female cancer patients and survivors report interest in sexual and vaginal health resources but few receive care [5,8].

The Female Sexual Medicine and Women's Health Program (FSMWHP) at Memorial Sloan Kettering Cancer Center (MSKCC) was established to address the consequences of cancer treatment on vaginal health and sexuality. The goal of the FSMWHP is to provide information, strategies, and support to improve vaginal symptoms and enhance confidence about sexual/vaginal health while simultaneously promoting evidence-based research. It was designed to be a two-clinician program consisting of a PhD clinical psychologist (certified as a sexual therapist) and a nurse practitioner (NP). Each new visit consists of a consultation

with both the PhD and NP together, including a formal intake reviewing medical and psychosexual history and specific information about the patient's sexual/vaginal health symptoms and concerns, followed by a targeted pelvic examination by the NP and finishing with a final discussion consisting of sexual/vaginal health promotion strategies and a treatment plan for the patient. This model enables the provision of comprehensive, quality care addressing both the emotional and physical effects of cancer in a clinically feasible and timely manner. Women are mainly referred to the program by their medical team, although some are self-referred. All women seen at the program are patients who received or are currently receiving treatment for their cancer at MSKCC.

The objectives of this clinical care assessment study are to characterize those seeking treatment at the FSMWHP, to examine the severity of patients' sexual health issues and concerns identified at their initial consultation, and to compare patient demographic and medical characteristics between patient groups defined by select sexual and vaginal health outcomes of interest. This information will be helpful in understanding patterns of need and referrals to the FSMWHP in order to assist in patient outreach efforts and tailored clinical interventions for women diagnosed with cancer.

Materials and Methods

A limited waiver of authorization was obtained to evaluate new-visit data collected on an FSMWHP clinical assessment form from 02/2011 to 07/2013. Of 509 new-visit patients, 493 (97%) completed the form.

The FSMWHP clinical assessment form consists of both clinician- and patient-completed portions. Vaginal health is assessed by clinician-rated (PhD/NP) physical vaginal characteristics based on the clinical pelvic/gynecological exam (agglutination, scarring/adhesions, pH, moisture, rugosity, elasticity, length, thickness, epithelial integrity, and vascularity [defined in Table 3]), as well as by the Vaginal Assessment Scale (VAS)—a 4-item measure in which the clinician asks patients to classify their perceptions of vaginal dryness, soreness, irritation, and dyspareunia as None, Mild, Moderate, or Severe. Each item is transformed to a numeric scale (0=None to 3=Severe). The VAS Composite score (range, 0–3) is formed by taking the mean of the items and is calculated only when at least 2/4 items are not missing. Due to NP staff changes, only 253 women received a pelvic examination. Similarly, the VAS was added to the FSMWHP clinical assessment form as of 02/2012 and was administered to 265 women at their initial consultation.

The clinician also asks patients how often they use vaginal health promotion strategies (vaginal lubricant, internal vaginal moisturizers, pelvic floor exercises, and dilators), and notes the frequency of use on the FSMWHP clinical assessment form, as well as whether the strategy was recommended at the visit as part of the patient's FSMWHP treatment plan.

The remainder of the FSMWHP clinical assessment form is patient-completed and includes the following validated patient-reported outcome (PRO) measures:

Female Sexual Function Index (FSFI) – a brief self-report of female sexual function [16] recently validated in female cancer survivors [17]. It is a 19-item questionnaire assessing six

domains of sexual function: 1) desire, 2) subjective arousal, 3) lubrication, 4) orgasm, 5) satisfaction, and 6) pain/discomfort. A total score greater than 26.55 indicates no sexual dysfunction.

Sexual Activity Questionnaire (SAQ) – a short and discrete screening tool for sexual activity and sexual function [18]. It is a 14-item self-report instrument assessing whether women are engaging in sexual activity with someone, reasons for any reported inactivity, and sexual feelings and experiences over the previous month [19].

Sexual Self-Schema Scale (SSS) – a self-rated assessment about the sexual aspects of one's sexual self [20]. It contains 26 scored trait adjectives (i.e., cautious, loving, open-minded) plus 24 adjective fillers (i.e., generous, practical, kind) that are rated from 0 (not at all descriptive of me) to 6 (very descriptive of me). The items measure three dimensions: 1) loving-romantic, 2) direct-open, and 3) embarrassment-conservatism. The total score is the sum of the first two dimensions minus the third. Internal consistency for the total score is 0.75. Scores are stable over time, with 2-week and 2-month test-retest reliability estimates of 0.89 and 0.88, respectively. A score above 59 indicates a positive sexual self schema [21].

Exploratory items addressing sexual/vaginal health were also included:

“Do you feel confident about sexual activity in the future?” (Yes/No), and

“How concerned or worried are you about your sexual function and your vaginal health?” (0–10 visual analogue scale with anchors at 0=Not at all, 5=Somewhat, and 10=Very).

We classified women as sexually active/inactive using two distinct methods. The first classifies women as sexually active if they answered “Yes” to SAQ item #3: “Do you engage in sexual activity with anyone at the moment?” The second classifies women as sexually active/inactive according to their FSFI responses. Patients who skipped or responded “not sexually active” to at least half of the 15 FSFI items with this response option were considered sexually inactive [17,22]. We refer to the versions as sexual activity (SAQ) and sexual activity (FSFI) in the remainder of the manuscript. The former definition (SAQ) is direct, but precludes self-stimulation and assesses sexual activity during an ambiguous timeframe (i.e., “at the moment”). The latter definition (FSFI) includes self-stimulation, assesses activity during a clear timeframe (i.e., “over the past 4 weeks”), and may be more sensitive to small changes in sexual activity.

We calculated descriptive statistics (frequencies and percentages for categorical variables, means, and standard deviations for continuous variables) for demographic, medical, and clinical assessment form variables. In an exploratory analysis, we also compared these characteristics between groups defined by four dichotomous variables of interest: sexual activity (FSFI), pain during pelvic exam, confidence about sexual activity in the future, and satisfaction with sexual relationship with partner (defined as responses to FSFI #15 of “very satisfied” or “moderately satisfied” versus “about equally satisfied and dissatisfied”, “moderately dissatisfied”, or “very dissatisfied”). Statistical significance of group differences was evaluated using Fisher's exact test (categorical variables) and two-sample t-tests (continuous variables). Significance tests with $p < 0.05$ were considered statistically

significant, and those with $p < 0.10$ were considered marginally significant. All statistical analysis was conducted in R 3.0.2 [23].

Results

Characteristics of FSMWHP Attendees

At initial consultation women seeking treatment at the FSMWHP were a mean age of 51.2 years (standard deviation [SD], 11.1; range, 21–80), with 45% younger than age 50 (Table 1). Sixty-two percent ($n=313$) were married or living with their significant other, and 29% ($n=149$) were single. However, 78% ($n=398$) reported a current intimate relationship. Attendees were predominantly white ($n=424$, 83%). The majority of women seeking treatment had a history of breast ($n=260$, 51%), gynecologic ($n=184$, 36%), or colorectal/anal ($n=35$, 7%) cancer. Almost an equal number completed cancer treatment ($n=246$, 48%) or were on some form of active treatment ($n=263$, 52%) including: endocrine therapy ($n=148$, 29%), chemo/biological therapy ($n=55$, 11%), pre/post-surgery ($n=47$, 9%), hormonal supplements ($n=23$, 5%), or radiation therapy ($n=8$, 2%).

PRO Measures and Sexual and Vaginal Health

Sexual Activity Questionnaire—Forty-seven percent ($n=224/475$) reported not engaging “in sexual activity with anyone at the moment” for reasons including: a physical problem, i.e., pain ($n=139$, 62%), no interest ($n=91$, 41%), or fatigue ($n=53$, 24%). Partner factors were also noted: lack of a partner ($n=71$, 32%), partner’s low libido ($n=24$, 11%), fatigue ($n=13$, 6%), or physical problem ($n=14$, 6%).

Sexual Self-Schema Scale—The total mean (SD) score was 60.7 (14.9), indicating a slightly positive sexual self-view, while 51% ($n=221/436$) met criteria for positive self-schema.

Female Sexual Function Index—The mean (SD) FSFI total score was 12.7 (8.3) among the full cohort ($n=463$) and 17.2 (6.6) among sexually active (FSFI) women ($n=304$). Among all women, 93.5% scored in the dysfunctional range (i.e., ≤ 26.55), with 50% and 75% scoring at or below 11.9 and 18.4, respectively. Among sexually active (FSFI) women, 90% scored in the dysfunctional range, with 50% and 75% scoring at or below 16.7 and 21.2, respectively. These results indicate the vast majority of FSMWHP patients had scores considerably worse than the validated cut-off suggestive of clinical dysfunction.

Exploratory items—Fifty-two percent ($n=236/451$) of women did not feel confident about future sexual activity, and 93% ($n=425/459$) were somewhat-to-very concerned/worried (rating of 5 to 10) about their sexual function/vaginal health, with 41% ($n=186$) being very concerned/worried (rating of 10).

Vaginal Assessment Scale

Among the 265 women administered the VAS, the mean (SD) VAS Composite score was 0.87 (0.64), with 68% reporting vaginal dryness, 57% dyspareunia, 25% irritation, and 19%

soreness (Table 2). Fifty-one percent reported moderate/severe dryness and 46% moderate/severe dyspareunia.

Pelvic Exam Clinical Outcomes

During their initial pelvic exam with our FSMWHP NP, 44% (n=87/197) of the patients reported pain with examination (Table 3). Degree of pain was described as mild (n=45, 23%), moderate (n=22, 11%), severe (n=3, 1.5%), or was not indicated (n=17, 8.5%). Approximately two-thirds had elevated vaginal pH (5–6.5 [35%] or >6.5 [33%]). Two-thirds had minimal (n=154, 62%) or no (n=12, 5%) vaginal moisture, and 44% (n=110) had minimal-to-no rugosity. Vaginal tissue thickness was thin/papery thin in 180 women (72%), although most had excellent (n=162, 65%) or fair (n=85, 34%) vaginal elasticity. Vaginal length varied, with estimations of >6 cm (n=197, 79%), 4–6 cm (n=47, 19%), or <4 cm (n=7, 3%).

Sexual/Vaginal Health Promotion Strategies

Only 33% (n=144/442) reported regular use of a vaginal lubricant and 21% (n=89/432) administered any type of moisturizer regularly (1 to 5+ times/week) (Table 4). As part of their FSMWHP treatment plan, 72% (n=309/432) were advised to initiate or increase application of vaginal moisturizers, 91% (n=380/420) to perform pelvic floor exercises, and 59% (n=171/292) to use dilators (Table 4).

Group Comparisons

Sexual activity (FSFI)—Sexual inactivity (FSFI) was associated with higher SSS embarrassment-conservatism scores (p=0.008), history of gynecologic or anal/colorectal cancer (p=0.011), vaginal scarring (p=0.003), decreased vaginal length (p=0.001), and poor/fair vaginal elasticity (p=0.023) (Table 5). It was marginally significantly associated with lack of confidence about future activity (p=0.051).

Pain on exam was associated with moderate-to-severe dryness (p<0.001) and dyspareunia (p<0.001) on the VAS, and with abnormal vaginal pH (p<0.001), decreased vaginal length (p=0.021), no-to-minimal moisture (p=0.002), and papery/thin tissue quality (p<0.001) (Table 6). Pain on exam was unexpectedly associated with good rugosity (p<0.001). Additional analysis revealed that women with no/minimal rugosity (vaginal folds or ridges) were older (median, 56 years) regardless of experience of pain, while those with good rugosity who did and did not experience pain were a median age of 54 and 46 years, respectively.

Confidence about future sexual activity—Women with a lack of confidence were more dissatisfied with their sexual relationship with their partner (p<0.001), had significantly poorer FSFI total and subscale scores, and lower SSS loving-romantic (p=0.002) and SSS total scores (p=0.026) compared to those who demonstrated confidence (Supplementary Table 1).

Satisfaction with sexual relationship—Lack of satisfaction with sexual relationship was more prevalent among married/partnered women ($p<0.001$) and those reporting moderate/severe vaginal dryness on the VAS ($p=0.04$) (Supplementary Table 2).

Discussion

Our investigation of the baseline characteristics and needs of women receiving care at the FSMWHP suggests that predominantly breast and gynecologic cancer patients are referred to the FSMWHP. We recognize the need for future outreach to other populations. Referrals were for sexual function concerns but also consisted of requests for assistance with vaginal health concerns, such as reducing pain with gynecologic exams or vulvovaginal discomfort.

At initial consult, women attending the FSMWHP noted symptoms of vaginal dryness and pain/dyspareunia. For many women, pelvic exams revealed signs of vaginal atrophy including elevated vaginal pH, lack of moisture, and discomfort with the examination itself. Interestingly, increased pain with exam was associated with good rugosity. Loss of vaginal rugae or folds in the vagina is a sign of aging or lower estrogen. We propose that this may be an indication of changes in lubrication and moisture before tissue decline has had time to occur, but examination of changes over time are needed to help elucidate this finding. Substantial concerns about sexual and vaginal health were expressed by women seeking treatment at the FSMWHP. Less than half of the women felt confident about future sexual activity, which corresponded with their rates of SAQ sexual activity (53%). Of the women who were sexually inactive (47%), physical problems or lack of interest were cited as the main reasons for lack of activity. Not surprising, sexual dysfunction was reported by the majority of FSMWHP participants, as per the FSFI. However, the directionality of the symptoms and sexual dysfunction, in addition to potential interactions between factors of confidence, sexual activity, interest, and relationship (satisfaction, closeness) need further investigation. For example, it is unclear if vaginal symptoms contribute to poor relationship quality or if poor relationship quality creates an unsupportive environment for addressing vaginal symptoms and declining sexual function, which then impacts confidence. Future analysis with longitudinal data will explore potential effects and patterns of directionality.

It should be noted that although sexuality is a priority for many cancer patients/survivors, for those unclear about this issue, vaginal health should remain a priority. These women represent an important group that is often forgotten. Vaginal health is crucial for comfort with gynecologic examinations—an essential component of cancer surveillance. In the general population, vulvovaginal atrophy is underreported and undertreated [24]. More than half of all women in natural menopause eventually will experience symptoms of vulvovaginal atrophy [25,26]. In a recent international survey of 3520 postmenopausal women, 45% reported vulvovaginal atrophy symptoms; and almost two-thirds (63%) did not recognize the chronicity of this condition [24]. In the setting of cancer, vulvovaginal atrophy can be more challenging with acute estrogen deprivation resulting from various cancer treatment modalities. Strategies are available to promote vaginal health, and female cancer survivors need basic advice and simple solutions.

Despite having over-the-counter options to address dryness and pain, less than one-third used lubricants routinely and less than one-quarter reported regular application of a moisturizer. These products can be extremely helpful if used with the frequency needed to address their symptoms (usually greater than the products' recommendations), and they must be used consistently for benefit. Clinically, we have seen that relief of symptoms can contribute to increased vaginal comfort and confidence with sexual activity. Within the FSMWHP we routinely encourage women to apply moisturizer not only vaginally but also externally for overall comfort and treatment (and even prevention in some cases) of vulvovaginal atrophy symptoms.

There are several noted limitations of the study. Not all women underwent a gynecologic exam and the FSMWHP clinical assessment form underwent modifications, resulting in different denominators for some of the items. From a program development standpoint, the FSMWHP clinical assessment form modifications enhanced our ability to identify and meet the needs of our patients. It now includes greater detail assessing the internal and external genitalia both by the symptoms reported by our patients and clinical features on pelvic exam. Plans to validate this addition to our clinical assessment are underway.

Future FSMWHP evaluation will investigate differences between pre-menopausal and menopausal patients, as pain, satisfaction, loss of desire, and physical examination variables, as well as prospectively examine the compliance and benefit of sexual/vaginal health promotion strategies by assessing any potential changes over time on PROs and pelvic exam outcomes.

Supplementary Material

Refer to Web version on PubMed Central for supplementary material.

Acknowledgments

We would like to gratefully acknowledge and thank Dr Larry Norton and Dr Richard Barakat for their generous and continual support of the clinical care and research endeavors of the Female Sexual Medicine and Women's Health Program

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Table 1

Demographic Baseline Data–Female Sexual Medicine Program (N=509)

Characteristic	N (%)
Age, years	
Mean	51.2
SD	11.1
Range	21 – 28
Age >50 years	280 (55%)
Age <50 years	229 (45%)
Marital Status	
Single	149 (29%)
Married/Living with partner	313 (62%)
Divorced/Separated/Widowed	47 (9%)
Currently Married or in Intimate Relationship	
Yes	398 (78%)
Race	
White	424 (83%)
Black	39 (8%)
Asian	27 (5%)
Other/No information	19 (4%)
Type of Cancer	
Breast	260 (51%)
Gynecologic	184 (36%)
Colorectal/Anal	35 (7%)
Skin	19 (4%)
Hematologic	17 (3%)
Gastric/Genitourinary (GU)	17 (3%)
Head/Neck	9 (2%)
Other (Sarcoma, High-risk BRCA, Non-cancerous conditions)	20 (4%)
Actively on Treatment	263 (52%)
Endocrine therapy	148 (29%)
Chemo/biological therapy	55 (11%)
Pre/post surgery	47 (9%)
Hormonal supplements	23 (5%)
Radiation therapy	8 (2%)

Table 2

Vaginal Assessment Scale

Measure	N (%)
VAS Composite Score (n=265)	
Mean	0.87
SD	0.64
Dryness (n=261)	
None	84 (32%)
Mild	44 (17%)
Moderate	52 (20%)
Severe	81 (31%)
Soreness (n=263)	
None	212 (81%)
Mild	28 (11%)
Moderate	15 (6%)
Severe	8 (3%)
Irritation (n=260)	
None	194 (75%)
Mild	45 (17%)
Moderate	15 (6%)
Severe	6 (2%)
Dyspareunia (n=263)	
None (or no attempt)	112 (43%)
Mild	31 (12%)
Moderate	45 (17%)
Severe	75 (28%)

* Percentages may not sum to 100% due to rounding

Table 3**Clinical Pelvic Exam Outcomes**

Measure	N (%)
Pain with Exam (n=197)	
None	110 (56%)
Mild	45 (23%)
Moderate	22 (11%)
Severe	3 (1.5%)
Not indicated	17 (8.5%)
Vaginal pH (n=244)	
Less than 5	79 (32%)
5–6.5	85 (35%)
6.5+	80 (33%)
Vaginal Moisture (n=249)	
Normal	83 (33%)
Minimal	154 (62%)
No moisture	12 (5%)
Rugosity (n=246)	
Good [thick rugated folds]	136 (55%)
Minimal [poorly rugated]	104 (42%)
None [smooth vagina walls]	6 (2%)
Elasticity (n=251)	
Excellent [fully distensible]	162 (65%)
Fair [moderate loss of distensibility]	85 (34%)
Poor [severe loss of distensibility]	4 (2%)
Length of Vagina (n=251)	
>6 cm	197 (79%)
4–6 cm	47 (19%)
<4 cm	7 (3%)
Vaginal Tissue Thickness (n=250)	
Normal [no signs of atrophy]	70 (28%)
Thin walls	178 (71%)
Paper thin [transparent]	2 (1%)
Vaginal Agglutination (n=242)	
None	231 (95%)
Mild [Mild fusing of vaginal tissue or minimal vaginal narrowing]	4 (2%)
Moderate [tissue fusing and substantial vaginal narrowing]	6 (2%)
Severe [vaginal fusing with closure of the vaginal canal]	1 (0.4%)
Scarring/Adhesions (n=239)	
None	210 (88%)
Mild	18 (8%)
Moderate	8 (3%)

Measure	N (%)
Severe	3 (1%)
Epithelial Integrity (n=251)	
No Petechiae **, non-friable	223 (90%)
Petechiae after scraping/swabbing	23 (9%)
Petechiae prior to contact, or bleeds with contact	2 (1%)
Vascularity (n=248)	
Good [pink]	159 (64%)
Fair [pale]	87 (35%)
Minimal [no color]	2 (1%)

* Percentages may not sum to 100% due to rounding

** Petechiae as defined as or non-raised, round, purple or red spots on the skin or vaginal mucous due to bleeding into the membranes

Table 4

Sexual/Vaginal Health Promotion Strategies

Strategy and Frequency	N (%)
Vaginal Lubricant n=442	
Never or not using	42 (9%)
Rarely or sometimes	53 (12%)
Always	144 (33%)
Recommended today or increase	203 (46%)
Vaginal Moisturizer n=432	
Never or not using	34 (8%)
1 x per week	11 (2%)
2 to 3 x per week	52 (12%)
4 to 5 x per week	9 (2%)
5 or more x per week	17 (4%)
Recommended today or increase	309 (72%)
Pelvic Floor Exercises n=420	
Never or N/A	22 (5%)
Rarely or few times per week	10 (2%)
Daily	8 (2%)
Recommended today or increase	380 (91%)
Dilator Therapy n=292	
Never or N/A	91 (31%)
1 x per week	8 (3%)
2 to 3 x per week	16 (5%)
4 to 5 x per week	3 (1%)
5 or more x per week	3 (1%)
Recommended today or increase	171 (59%)

* Percentages may not sum to 100% due to rounding

* Denominators may vary based on what therapy the patient may have been using

Table 5

Characteristics of FSMWHP Patients by Sexual Activity (as Defined by the FSFI)

		Sexual Activity (by FSFI)		
		Not Active	Active	
Variable	Combined n (column %)	n (row %)	n (row %)	p-value
Age Group (n=463)				
<50	213 (46.0%)	72 (33.8%)	141 (66.2%)	0.899
50+	250 (54.0%)	87 (34.8%)	163 (65.2%)	
Marital Status (n=463)				
Divorced/Separated/Widowed	42 (9.1%)	19 (45.2%)	23 (54.8%)	0.118
Married/Partner	292 (63.1%)	91 (31.2%)	201 (68.8%)	
Single	129 (27.9%)	49 (38.0%)	80 (62.0%)	
Current Intimate Relationship (n=459)				
No	73 (15.9%)	49 (67.1%)	24 (32.9%)	<0.001
Yes	386 (84.1%)	109 (28.2%)	277 (71.8%)	
Currently on Active Treatment (n=463)				
No	223 (48.2%)	74 (33.2%)	149 (66.8%)	0.684
Yes	240 (51.8%)	85 (35.4%)	155 (64.6%)	
Primary Treatment (n=239)				
Chemo/Biological therapy	50 (20.9%)	24 (48.0%)	26 (52.0%)	0.07
Endocrine	121 (50.6%)	36 (29.8%)	85 (70.2%)	
Hormone supplements	21 (8.8%)	5 (23.8%)	16 (76.2%)	
Radiation	8 (3.3%)	2 (25.0%)	6 (75.0%)	
Surgery	39 (16.3%)	18 (46.2%)	21 (53.8%)	
Primary Diagnosis (n=463)				
Anal/Colorectal	29 (6.3%)	12 (41.4%)	17 (58.6%)	0.011
Breast	231 (49.9%)	63 (27.3%)	168 (72.7%)	
Gynecologic	153 (33.0%)	66 (43.1%)	87 (56.9%)	
Other	50 (10.8%)	18 (36.0%)	32 (64.0%)	
VAS Dryness (n=463)				
None/Mild	340 (73.4%)	127 (37.4%)	213 (62.6%)	0.031
Moderate/Severe	123 (26.6%)	32 (26.0%)	91 (74.0%)	
VAS Soreness (n=238)				
None	194 (81.5%)	59 (30.4%)	135 (69.6%)	1
Mild/Moderate/Severe	44 (18.5%)	13 (29.5%)	31 (70.5%)	
VAS Irritation (n=235)				
None	177 (75.3%)	54 (30.5%)	123 (69.5%)	1
Mild/Moderate/Severe	58 (24.7%)	18 (31.0%)	40 (69.0%)	
VAS Dyspareunia (n=463)				
None/Mild	350 (75.6%)	134 (38.3%)	216 (61.7%)	0.002
Moderate/Severe	113 (24.4%)	25 (22.1%)	88 (77.9%)	
Pain with Exam (n=183)				

		Sexual Activity (by FSFI)			
		Combined	Not Active	Active	
Variable		n (column %)	n (row %)	n (row %)	p-value
No		102 (55.7%)	28 (27.5%)	74 (72.5%)	0.163
Yes		81 (44.3%)	31 (38.3%)	50 (61.7%)	
Vaginal pH (n=227)					
<5		76 (33.5%)	21 (27.6%)	55 (72.4%)	0.54
5–6.5		78 (34.4%)	27 (34.6%)	51 (65.4%)	
>6.5		73 (32.2%)	20 (27.4%)	53 (72.6%)	
Vaginal Moisture (n=232)					
None/Minimal		152 (65.5%)	49 (32.2%)	103 (67.8%)	0.552
Normal		80 (34.5%)	22 (27.5%)	58 (72.5%)	
Vaginal Rugosity (n=229)					
None/Minimal		102 (44.5%)	33 (32.4%)	69 (67.6%)	0.52
Good		127 (55.5%)	35 (27.6%)	92 (72.4%)	
Vaginal Elasticity (n=234)					
Poor/Fair		82 (35.0%)	33 (40.2%)	49 (59.8%)	0.023
Excellent		152 (65.0%)	38 (25.0%)	114 (75.0%)	
Vagina Length (n=234)					
6cm		48 (20.5%)	25 (52.1%)	23 (47.9%)	0.001
>6cm		186 (79.5%)	47 (25.3%)	139 (74.7%)	
Vaginal Thickness (n=233)					
Papery/Thin		167 (71.7%)	48 (28.7%)	119 (71.3%)	0.451
Normal		66 (28.3%)	23 (34.8%)	43 (65.2%)	
Agglutination (n=225)					
No		216 (96.0%)	65 (30.1%)	151 (69.9%)	0.141
Yes		9 (4.0%)	5 (55.6%)	4 (44.4%)	
Scarring (n=224)					
No		196 (87.5%)	53 (27.0%)	143 (73.0%)	0.003
Yes		28 (12.5%)	16 (57.1%)	12 (42.9%)	
Epithelial Integrity (n=232)					
Normal		210 (90.5%)	60 (28.6%)	150 (71.4%)	0.337
Petechiae		22 (9.5%)	9 (40.9%)	13 (59.1%)	
Vascularity (n=231)					
Minimal/Fair		81 (35.1%)	27 (33.3%)	54 (66.7%)	0.558
Good		150 (64.9%)	43 (28.7%)	107 (71.3%)	
Confident in Future Sexual Activity (n=427)					
No/Not interested		250 (58.5%)	96 (38.4%)	154 (61.6%)	0.051
Yes		177 (41.5%)	51 (28.8%)	126 (71.2%)	
Satisfaction with Sexual Relationship With Partner (FSFI #15) (n=393)					
Not Satisfied		307 (78.1%)	88 (28.7%)	219 (71.3%)	0.197
Satisfied		86 (21.9%)	18 (20.9%)	68 (79.1%)	
Sexual Self-Schema (SSS) Group (n=412)					

Variable	Combined n (column %)	Sexual Activity (by FSFI)		p-value
		Not Active n (row %)	Active n (row %)	
Negative SSS	206 (50.0%)	76 (36.9%)	130 (63.1%)	0.143
Positive SSS	206 (50.0%)	61 (29.6%)	145 (70.4%)	
Concern/Worry about Sexual Function/Vaginal Health (n=437)				
0–5	90 (20.6%)	33 (36.7%)	57 (63.3%)	0.009
6–9	171 (39.1%)	43 (25.1%)	128 (74.9%)	
10	176 (40.3%)	71 (40.3%)	105 (59.7%)	
	Combined Mean (SD)	Mean (SD)	Mean (SD)	p-value
Age (n=463)	51.0 (11.2)	51.3 (11.0)	50.8 (11.3)	0.63
VAS Composite (n=240)	0.88 (0.63)	0.77 (0.62)	0.93 (0.63)	0.06
SSS Loving-Romantic Subscale (n=415)	44.1 (7.74)	43.2 (7.75)	44.5 (7.71)	0.102
SSS Direct-Open Subscale (n=422)	38.1 (7.10)	38.2 (6.98)	38.0 (7.18)	0.824
SSS Embarrassment-Conservatism Subscale (n=414)	21.7 (6.24)	22.9 (6.50)	21.1 (6.03)	0.008
SSS Total Score (n=412)	60.5 (14.8)	58.5 (14.9)	61.5 (14.6)	0.051

Table 6

Characteristics of FSMWHP Patients by Experience of Pain with Pelvic Exam

Variable	Combined n (column %)	Pain with Exam		p-value
		No	Yes	
		n (row %)	n (row %)	
Age Group (n=197)				
<50	48 (43.6%)	48 (58.5%)	34 (41.5%)	0.618
50+	62 (56.4%)	62 (53.9%)	53 (46.1%)	
Marital Status (n=197)				
Divorced/Separated/Widowed	9 (8.18%)	9 (60.0%)	6 (40.0%)	0.282
Married/Partner	80 (72.7%)	80 (58.8%)	56 (41.2%)	
Single	21 (19.1%)	21 (45.7%)	25 (54.3%)	
Current Intimate Relationship (n=191)				
No	13 (12.0%)	13 (50.0%)	13 (50.0%)	0.609
Yes	95 (88.0%)	95 (57.6%)	70 (42.4%)	
Currently on Active Treatment (n=197)				
No	55 (50.0%)	55 (54.5%)	46 (45.5%)	0.797
Yes	55 (50.0%)	55 (57.3%)	41 (42.7%)	
Primary Treatment (n=96)				
Chemo/Biological therapy	6 (10.9%)	6 (60.0%)	4 (40.0%)	0.768
Endocrine	36 (65.5%)	36 (53.7%)	31 (46.3%)	
Hormone supplements	8 (14.5%)	8 (72.7%)	3 (27.3%)	
Radiation	2 (3.64%)	2 (50.0%)	2 (50.0%)	
Surgery	3 (5.45%)	3 (75.0%)	1 (25.0%)	
Primary Diagnosis (n=197)				
Anal/Colorectal	7 (6.36%)	7 (53.8%)	6 (46.2%)	0.88
Breast	62 (56.4%)	62 (54.4%)	52 (45.6%)	
Gynecologic	30 (27.3%)	30 (56.6%)	23 (43.4%)	
Other	11 (10.0%)	11 (64.7%)	6 (35.3%)	
VAS Dryness (n=197)				
None/Mild	105 (95.5%)	105 (69.5%)	46 (30.5%)	<0.001
Moderate/Severe	5 (4.55%)	5 (10.9%)	41 (89.1%)	
VAS Soreness (n=84)				
None	18 (90.0%)	18 (26.5%)	50 (73.5%)	0.336
Mild/Moderate/Severe	2 (10.0%)	2 (12.5%)	14 (87.5%)	
VAS Irritation (n=84)				
None	16 (80.0%)	16 (25.8%)	46 (74.2%)	0.667
Mild/Moderate/Severe	4 (20.0%)	4 (18.2%)	18 (81.8%)	
VAS Dyspareunia (n=197)				
None/Mild	101 (91.8%)	101 (67.8%)	48 (32.2%)	<0.001
Moderate/Severe	9 (8.18%)	9 (18.8%)	39 (81.2%)	
Vaginal pH (n=190)				

Variable	Combined n (column %)	Pain with Exam		p-value
		No n (row %)	Yes n (row %)	
<5	46 (43.0%)	46 (75.4%)	15 (24.6%)	<0.001
5–6.5	37 (34.6%)	37 (56.1%)	29 (43.9%)	
>6.5	24 (22.4%)	24 (38.1%)	39 (61.9%)	
Vaginal Moisture (n=195)				
None/Minimal	60 (55.0%)	60 (47.2%)	67 (52.8%)	0.002
Normal	49 (45.0%)	49 (72.1%)	19 (27.9%)	
Vaginal Rugosity (n=193)				
None/Minimal	67 (61.5%)	67 (69.1%)	30 (30.9%)	0.001
Good	42 (38.5%)	42 (43.8%)	54 (56.2%)	
Vaginal Elasticity (n=195)				
Poor/Fair	39 (35.5%)	39 (49.4%)	40 (50.6%)	0.136
Excellent	71 (64.5%)	71 (61.2%)	45 (38.8%)	
Vagina Length (n=196)				
6cm	15 (13.6%)	15 (38.5%)	24 (61.5%)	0.021
>6cm	95 (86.4%)	95 (60.5%)	62 (39.5%)	
Vaginal Thickness (n=197)				
Papery/Thin	61 (55.5%)	61 (44.9%)	75 (55.1%)	<0.001
Normal	49 (44.5%)	49 (80.3%)	12 (19.7%)	
Agglutination (n=193)				
No	107 (97.3%)	107 (57.5%)	79 (42.5%)	0.466
Yes	3 (2.73%)	3 (42.9%)	4 (57.1%)	
Scarring (n=192)				
No	99 (90.0%)	99 (59.3%)	68 (40.7%)	0.221
Yes	11 (10.0%)	11 (44.0%)	14 (56.0%)	
Epithelial Integrity (n=195)				
Normal	107 (97.3%)	107 (60.1%)	71 (39.9%)	0.002
Petechiae	3 (2.73%)	3 (17.6%)	14 (82.4%)	
Vascularity (n=195)				
Minimal/Fair	47 (42.7%)	47 (59.5%)	32 (40.5%)	0.569
Good	63 (57.3%)	63 (54.3%)	53 (45.7%)	
Confident in Future Sexual Activity (n=179)				
No/Not Interested	58 (58.6%)	58 (54.2%)	49 (45.8%)	0.835
Yes	41 (41.4%)	41 (56.9%)	31 (43.1%)	
Sexually Active (by FSFI) (n=183)				
Not Active	28 (27.5%)	28 (47.5%)	31 (52.5%)	0.163
Active	74 (72.5%)	74 (59.7%)	50 (40.3%)	
Satisfaction with Sexual Relationship w/Partner (FSFI #15) (n=165)				
Not Satisfied	82 (86.3%)	82 (59.4%)	56 (40.6%)	0.384
Satisfied	13 (13.7%)	13 (48.1%)	14 (51.9%)	
Sexual Self-Schema (SSS) Group (n=173)				

Variable	Combined n (column %)	Pain with Exam		p-value
		No n (row %)	Yes n (row %)	
Negative SSS	53 (54.6%)	53 (55.2%)	43 (44.8%)	0.92
Positive SSS	44 (45.4%)	44 (57.1%)	33 (42.9%)	
Concern/Worry about Sexual Function/Vaginal Health (n=180)				
0–5	20 (20.2%)	20 (60.6%)	13 (39.4%)	0.761
6–9	43 (43.4%)	43 (54.4%)	36 (45.6%)	
10	36 (36.4%)	36 (52.9%)	32 (47.1%)	
	Combined Mean (SD)	Mean (SD)	Mean (SD)	p-value
Age (n=197)	52.5 (10.5)	51.8 (10.4)	53.5 (10.5)	0.249
VAS Composite (n=84)	1.01 (0.64)	0.71 (0.63)	1.11 (0.62)	0.019
FSFI Desire (n=188)	2.19 (1.09)	2.13 (1.06)	2.27 (1.14)	0.361
FSFI Arousal (n=190)	2.02 (1.63)	2.09 (1.54)	1.92 (1.74)	0.508
FSFI Lubrication (n=185)	1.82 (1.73)	2.02 (1.79)	1.56 (1.63)	0.073
FSFI Orgasm (n=184)	2.00 (1.90)	1.96 (1.70)	2.06 (2.13)	0.727
FSFI Satisfaction (n=176)	2.42 (1.41)	2.41 (1.42)	2.44 (1.41)	0.897
FSFI Pain (n=187)	1.50 (1.77)	1.97 (1.99)	0.89 (1.19)	<0.001
FSFI Total (n=183)	11.8 (7.36)	12.5 (7.42)	11.0 (7.25)	0.178
SSS Loving-Romantic Subscale (n=173)	44.1 (7.94)	44.4 (8.70)	43.8 (6.90)	0.653
SSS Direct-Open Subscale (n=174)	37.9 (6.59)	37.4 (6.59)	38.4 (6.59)	0.301
SSS Embarrassment-Conservatism Subscale (n=173)	22.2 (6.00)	22.1 (5.86)	22.2 (6.20)	0.909
SSS Total Score (n=173)	59.8 (14.0)	59.6 (13.9)	60.0 (14.2)	0.827